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Spiders from Niah Cave, Sarawak, East Malaysia, collected by P. Strinati

by

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With 16 figures

ABSTRACT

The spiders collected in the Niah cave belong to four species, two of which are new: *Vytfutia pallens* sp. n. (Agelenidae) and *Nephilengys niahensis* sp. n. (Tetragnathidae). Both sexes are described for the first species, for the second only females were collected. The creation of the latter species is justified by surveying the variability in 25 specimens of *N. malabarensis*. A third species is cosmopolitan: *Urozelotes rusticus,* whereas a female *Scytodes* is described but not named.

INTRODUCTION

This paper treats a small collection of spiders, made by P. Strinati with the assistance of C. Hug in Niah cave on the 10th of april 1984. The spiders belong to four species. None of them displays a troglobitic morphology, although one (an agelenid), was found to be somewhat paler than its congener. Two (and possibly a third) represent new species.

The large and well-known Niah cave is situated in the eastern part of Sarawak, northern Borneo. It is surrounded by a forested area, which now is a National Park. This well-known, huge cave shelters many thousands of bats and swiftlets; a host of invertebrates is attracted to the large deposits of guano.

Little is yet known of the cave fauna in tropical East Asia, and although various faunal surveys have been carried out, no major taxonomical studies on the spider fauna have been published yet. In general, it is believed that the terrestrial fauna in tropical caves is less specialized and includes relatively less troglomorphic species than it does in temperate and subtropical climates (MITCHELL 1969, CHAPMAN 1986, TRAJANO 1986). A number of spider species that are often encountered in caves are known to be widely

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distributed in the tropics and often occur in tunnels and buildings as well. (DEELEMAN-REINHOLD 1986*b*). These include *Scytodes fusca* Walckenaer, *S. longipes* Lucas, *Uthina luzonica* Simon, *Heteropoda venatoria* (Linnaeus), *Theridion rufipes* Lucas, *Zosis geniculatus* (Olivier) and *Psechrus argentatus* (Doleschall), several of which can be said to be guanophilic.

Mr. Strinati's collection is remarkable in that none of these stereotyped species of eutrophic cave entrances was represented. The only widespread species found is the cosmopolitan *Urozelotes rusticus* (L. Koch). Instead, the discovery of a new *Nephilengys* species came quite unexpected, as this common and widespread synanthropic genus has been known for 150 years and was till now believed to be represented in Asia by one synanthropic species only. The species most abundantly collected in the Niah cave and the only one present with both males and females is a new species of the agelenid genus *Vytfutia,* described only two years ago by me from Sumatra. The single *Scytodes* specimen is dissimilar to any of the better known species from tropical Asia; in the absence of a male, no name has been given.

I am grateful to Dr. V. Aellen for having placed this interesting material at my disposal.

FAMILY Scytodidae

Scytodes spec. (figs 1-3)

Material examined: 1♀ (MHNG).

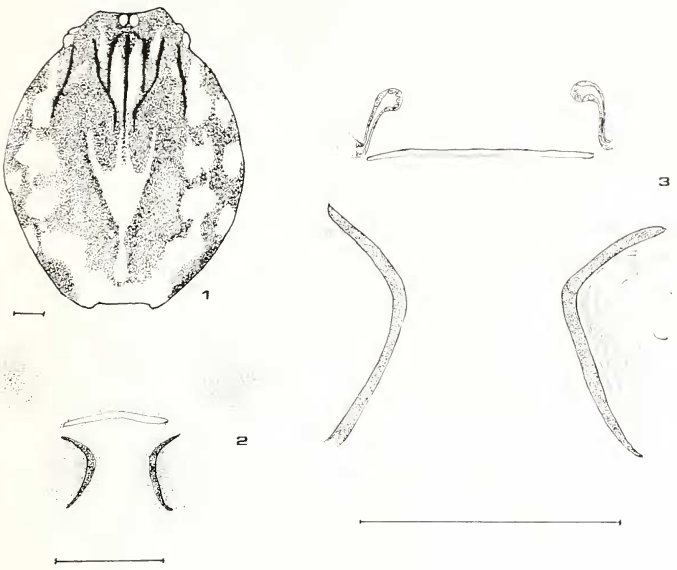
Description: measurements in mm: carapace 1.9 long, 1.4 wide, 1.0 high. Legs:

	Fe	Pa	Ti	Mt	Ta
I	2.2	0.4	2.1	2.1	0.6
II	1.7	0.4	1.7	1.7	0.6
III	1.4	0.3	1.3	1.3	0.6
IV	2.0	0.4	1.9	1.9	0.6
palp	0.5	0.2	0.3	—	0.4

Colour: creamy white, with a dark brown pattern (fig. 1). Legs conspicuously annulated: femora with dark brown base and tip and two dark rings in between, the white zones between the rings of same width as the rings; patellae with white base and dark tip; tibiae with dark base and tip and one dark ring in between of a width equal to that of the intermediate white zones; metatarsi with white base and a median and distal dark zone. Abdomen with no definite pattern, roughly light in front, dark behind. Sternum yellowish, with a dark central area and four pairs of dark round spots along the border adjacent to the coxae.

Epigastric area fig. 2, vulva and scutula fig. 3, spermathecae simple, claviform.

Discussion: Several *Scytodes* species have been described from tropical Asia, the female genital organ of most of them however has not been studied. As far as I can ascertain, none of them is described to have contrastingly annulated legs. The leg pattern is similar to that of the mediterranean-european *S. thoracica* (LATREILLE), which has been recorded for Calcutta (TIKADER & BISWAS 1981: 17) and Taiwan (cf. BRIGNOLI 1976; 150). Perhaps our specimen is conspecific with this material and belongs to a



FIGS 1-3.

Scytodes spec. 1: carapace, 2: epigastric region, 3: spermathecae and scutulae. Scales 0.2 mm.

widespread but little known species. Females of a similar *Scytodes,* with a slightly greater distance between the scutulae, were found by D. Bilton in a small cave on Walea Bahi Pulau, one of the Togian islands in central Sulawesi. Our specimen differs greatly from *S. thoracica* by the smaller size, different carapace pattern and the genital organs. Since various incompletely known species have been named in tropical Asia, I shall not name this species at present.

FAMILY Gnaphosidae

Urozelotes rusticus (L. Koch, 1872)

Material: one ♀ (MHNG).

The genus *Urozelotes* was recently erected for *Zelotes rusticus* by PLATNICK & MURPHY (1984). *U. rusticus* is synanthropic and is known from a variety of habitats, including caves and buildings; Asian records are from Kinabalu (N. Borneo), India and Vietnam. Its distribution is worldwide, with the exception of Australia and New Zealand.

FAMILY Agelenidae

Vytfutia pallens sp. n. (figs 4-10)

Material: ♂ holotype, 2♂ paratypes, 12♀ paratypes, all in MHNG but for 1♂ and 2♀ in the author's collection.

Description: measurements in mm: male holotype: total length 4.4, carapace 2.2 long, 1.7 wide, head 1.0 wide, chelicerae 0.7 long. Largest male 5.0 mm long, smallest 4.4. Female: total length 6.7 mm, carapace 3.3 long, 2.3 wide, head 1.4 wide, chelicerae 1.3 long. Largest female 7.7 mm, smallest 6.2.

Eyes: PL = PM = AL = 2 AM; dPM: PM-PM: PM-PL = 1: 1½: 2.

Leg measurements in mm:

		Fe	Pa	Ti	Mt	Ta
♂ holotype	I	2.3	0.9	2.2	1.9	1.2
	II	2.1	0.7	1.8	1.8	1.0
	III	2.1	0.8	1.5	1.7	0.9
	IV	2.3	0.9	1.9	1.9	1.0
	palp	1.2	0.4	0.6	—	0.6
♀	I	2.9	1.2	2.5	2.4	1.3
	II	2.7	1.1	2.2	2.0	1.0
	III	2.4	1.0	1.7	1.7	1.0
	IV	2.7	1.1	1.9	1.9	1.0
	palp	1.1	0.25	0.7	—	1.0

Colour: carapace ferruginous, head region darker with light central longitudinal band, black eye circles lacking. Chelicerae dark brown, legs ferruginous, tips slightly darker. Abdomen white with 3 pairs of impressed dots, snowy granulations of various extent on dorsal surface.

Female: posterior eye row recurved. Chelicerae massive, bulging anteriorly, with lateral condyle, front densely covered with erect black hair, 5 teeth on promargin (second largest), 4 teeth on retromargin (first largest). Hairs on carapace and legs rubbed off, calamistrum remaining in only a few specimens.

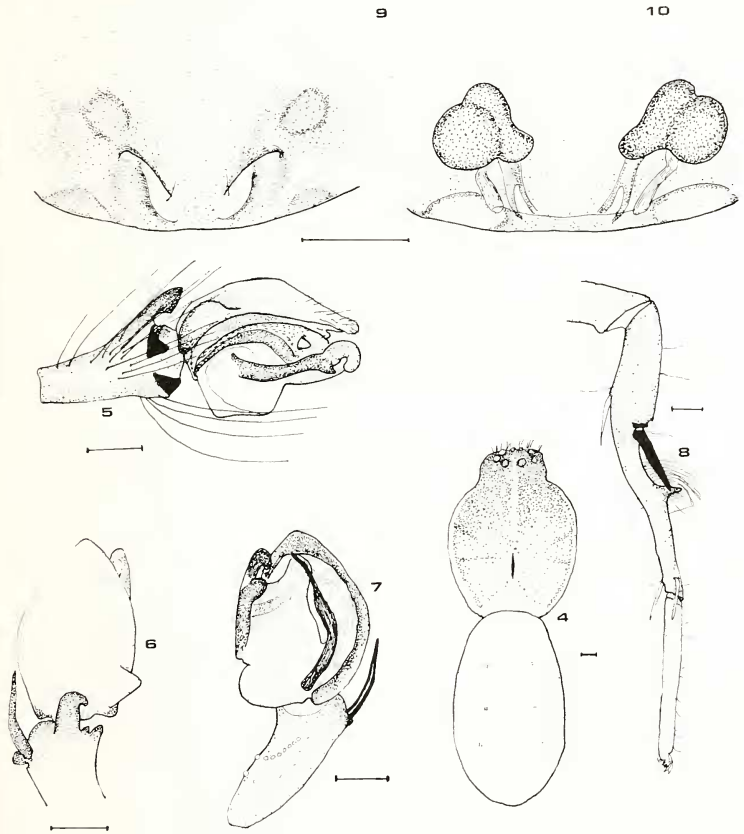
Chetotaxy: femur I-IV with 2 d, 1 pd, femur I subapically with 1 small pd and 1 rd, II-IV subapically with 3 small spines in pd, d and rd position; patella III and IV with 1 rd; tibia I-II with 2-3 pl, 0-2 rl, 1-2 v, tibia III and IV 1-2 pl, 2 rl and 1-3 v; metatarsus I with 2 v basally and 1-2 v apically, metatarasus ll 0-2 pl and 0-2 rl, metatarsus III-IV 0-3 pl, rl and v.

Cribellum well developed, about 2/3 of the width of spinnerets. Calamistrum in a single row, extending over 1/3-1/2 of segment length. Spinnerets short, conical, apical segment of posteriors much shorter than basal segment.

Epigyne and vulva fig. 9 and 10. Epigyne a flat plate with a pair of depressions connected with the introductory slits, posterior margin of the plate rebordered, bearing a pair of impressions on the inner, dorsal surface. Spermathecae large and rigid, with a transverse groove, connected with the opening slits by a weakly sclerotized duct.

Male: (fig. 4) differs from the female in the smaller size and in the following respects: chelicerae less massive, anteriorly flat, promargin may have one tooth less. Metatarsus I modified as in *V. bedel* (fig. 8): basal retroventral segment enlarged, trichobothrial pat-

tern as in fig. 8, the metatarsal segment distal to the spine curved and provided with a dorsal horn, shaping with the spine a clasping device. Male palp figs 5-7.



FIGS 4-10.

Vytfutia pallens sp. n., 4: male, holotype, dorsal view, 5: male, right palp, lateral view, 6: id., dorsal view, 7: id., mesal view; 8: male, holotype, right leg I, metatarsus and tarsus, lateral view, 9: female, epigyne, 10: vulva, dorsal view. Scales 0.2 mm.

Diagnosis : *V. pallens* is distinguished from *V. bedel* by the larger size, paler colour, smaller eyes and by considerable differences in the genital organs. The epigynal plate lacks a rim and the male palpal tibia is provided with two lateral teeth, a large dorsal apophysis and with an additional median clawlike sclerite. The embolus is shorter and more rigid than in *bedel*.

Discussion : this species betrays its cavernicolous way of life by the paler colour and the smaller eyes relative to *V. bedel*. The larger size may possibly also be adaptive. The genus *Vytfutia* was recently erected for an arboreal cribellate species from rainforest of Sumatra (Deeleman-Reinhold 1986*a*). The genus differs from all other amaurobioid genera by the combination of large posterior eyes in a procurved row, the anterior medians being much smaller, clasping spurs on metatarsi I in the male, and the genital organs. *V. pallens* shares with *V. bedel* the following caracteristics: the palpal tibia bears various dorsal and lateral apophyses, the embolus is flattened spiniform, and in resting position is supported by a distal membranous conductor. The median apophysis is long and reaches the tip of the bulb.

Remark : the familial placement is not quite satisfactory. The delimitation of the classical amaurobioid families: Agelenidae, Amaurobiidae and Titanoecidae was conceived on the bases of holarctic species. In the tropics and the southern hemisphere however, these families intergrade and the number and diversity on familial level is greater. Various authors hold widely different views on how the families should be diagnosed and regrouped, according to the geographical region of the fauna they studied (Lehtinen 1967, Forster & Wilton 1973). For the New Zealand fauna several new families had to be created. Admitting that the Agelenidae include both ecribellate and cribellate spiders, this family still seems the best choice at the moment.

Family Tetragnathidae

Nephilengys L. Koch

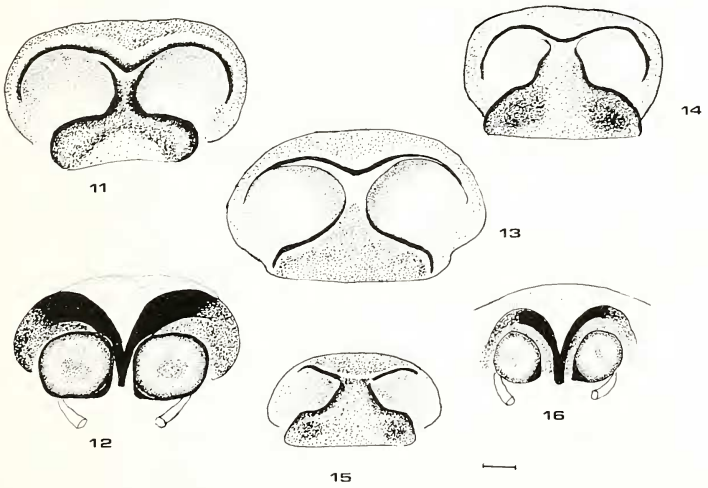
The genus *Nephilengys* was hitherto represented in Asia by *N. malabarensis* (Walckenaer) only. The 5 adult females from Niah cave differ consistently both in somatic and genitalic characters, justifying the erection of a new species.

Nephilengys malabarensis (Walckenaer) (figs 11-14)

This partly synanthropic, often described species has a distribution extending from India to Australia. The synonymisation of *N. rivulata* O. P. Cambridge (Sri Lanka), *N. schmeltzii* L. Koch (Philippines) and *N. hofmanni* L. Koch (Borneo) by Thorell (1890), Roewer (1942) and Bonnet (1958) seems justified. The large females are found sitting in a retreat close to the hub of a spacious web that has been reduced to the lower half or third of an orb. One or more males, many times smaller than the female, usually are seen in the vicinity of the female.

In order to establish the variability in this species, 25 adult females from our own collection were studied and compared with the material from Niah cave. These individuals were collected in Sri Lanka, Thailand, Sumatra, Borneo (Sarawak and Kalimantan), Sulawesi, Java and the Philippines (Mindanao). Most were taken from overhanging roofs of houses, outhouses, sheds etc., a few came from big trees in rainforest, far from human dwellings (Sumatra, Kalimantan) and from the twilight zone of a cave (Sulawesi, Java).

Carapace length ranges from 6.3 mm to 9.0 mm (the single female from Sarawak 8.3 mm), length metatarsus 1 from 8.5 to 11.5 mm (Sarawak female 11.3 mm). Larger and smaller specimens are found throughout the whole range. The legs, particularly the femora and tibiae are always distinctly annulated. Normally, there is a pair of sharply delimited round or triangular yellowish spots on the venter, just behind the epigastric fold. Behind these spots usually a pair of smaller, comma-shaped or rectangular yellowish spots is found (both pairs and the sternum are a brick red colour in the living spider). Regional differences in the ventral abdominal pattern, as indicated by MERIAN (1911: 201) for Sri Lanka, Sumatra, Java, and the Philippines are in main lines confirmed in our material, except that the anterior and posterior spots in our two specimens from Sri Lanka are distinctly triangular and lanceolate respectively, as in *"rivulata"* O. P. Cambridge instead of rounded. Considerable local variation in the ventral marking was found to exist only in our material from Java and Mindanao. The anterior spots are well separated in all specimens except for specimens from Java and Mindanao, in which they touch or partly fuse. Our two specimens from Borneo show a pattern similar to that of our many females from central Thailand (Khao Yai), consisting of two anterior round spots separated by at least their diamater and posteriorly a pair of straight bars, transversely slanting. The abdominal pattern thus can be said to vary to a certain extent and seems to have little taxonomic significance.



FIGS 11-16.

Nephilengys malabarensis (Walckenaer). 11: epigyne, W. Sarawak, 12: id., vulva, dorsal view, 13: epigyne, Thailand, 14: id., W. Java. Figs 15-16: *Nephilengys niahensis* sp. n., holotype, 15: epigyne, 16: vulva, dorsal view. Scale 0.2 mm.

The epigyne varies particularly in the shape of the septum, which may be stalk like with parallel sides or more or less trapezoid. Two extremes have been depicted in figs 11 and 13. The posterior plate is rectangular or rounded, occasionally converging anteriorly. The base of the septum (where it connects with the posterior plate) is always more than three times narrower than the width of the posterior plate, up to seven or eight times. The antero-lateral ridge extends laterally to at least the middle of the epigyne height. Epigyne figs 11, 13, 14, vulva fig. 12.

Nephilengys niahensis sp. n. (figs 15, 16)

Material examined: 1 ♀ (holotype, 4 ♀, paratypes (MHNG, 1 ♀ paratype in the author's collection), 1 subad. ♀.

Description: length carapace 4.5-5.5 mm, metatarsus I 6.5-8.0 mm. Measurements of holotype: carapace 4.8 mm long, 3.7 mm wide; leg I 6.7-2.1-5.4-7.3-2.2. Colour, eye arrangement as in *malabarensis,* distance PM eyes 3 times their diameter (2 times in *malabarensis*); carapace covered with short procumbent spinelike bristles. Sternum entirely yellowish in spirit (probably like *malabarensis* brick red in living individuals). Anterior spots on venter variable, connected by a central zone of the same colour, in some specimens completely fused to a transverse area which laterally continues backwards into the posterior spots. Epigyne: fig. 15. Vulva: fig. 16. The epigynal septum is wide and trapezoid, its posterior zone of attachment a half to one third of the width of the posterior plate; in dorsal aspect of the vulva, the spermathecae are shown to be further apart than in *malabarensis.*

Male unknown.

Diagnosis: *N. niahensis* differs from *N. malabarensis* by the smaller size (no overlap in carapace length: 6.3-9.0 mm for adult females of *malabarensis,* 4.5-5.5 mm for *niahensis,* metatarsus I length: 8.5-11.5 mm for *malabarensis,* 6.5-8.0 mm for *niahensis*), and in the epigyne by the much shorter anterior ridge and the wider septum. The ill defined and partly fused spots on the venter behind the epigastric fold and the indistinct posterior spots on the venter are probably also diagnostic. The sternum lacks the dark lateral margins.

Discussion: It is surprising to find a new *Nephilengys* species, nearly 150 years after the description of the first and so far only oriental species. The differences with *malabarensis* and its synonyms are convincing enough and are consistent throughout the material of *malabarensis* from a wide variety of localities to justify this new species.

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